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EXAMINER

BEYEN, ZEWDU A

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/583,962 | Applicant(s) ERIKSSON ET AL. | |
| | Examiner ZEWDU BEYEN | Art Unit 2461 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

- ♦ This action is responsive to amendment dated 02/12/2010.
- ♦ Applicant's amendments filed on 02/12/2010 has been entered and considered.
- ♦ Claims 1, 12-16, and 20, are amended.
- ♦ Claims 1-20 are pending.
- ♦ Claims 1-20 stand rejected.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, claims 1,12,15 and 20 recite the phrase " where each mobile user data packet flow is separate and different from session set up messages sent with IP layer

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control signaling and/or session layer control signaling” which was not described in the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4-10, and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Mitchell to (US-PGPUB-20030093481), in view of Das to (US-PGPUB-20040203765), and in view of Shew to (US7580401), and Further in view of Fieschi to (US6628655)

Regarding claim 1, Mitchell teaches controlling the individual packet flows from a common IP based control plane provided with midcom agent(**i.e. fig.6. box 18, Call servers/proxies**) (**fig.6 and fig.7 discloses controlling a call set-up by the call server via middlebox**) each flow(**i.e. call set-up message**) registering its presence in each middlebox(**i.e. fig.6, middlebox 1**) it encounters on its way from its source(**fig.6 terminal A**) to its destination (**fig.6 , terminal B**) at the user plane (**fig.7 step 62, discloses the Middlebox 1 sends a public addresses and port allocated for the call that is requested to be set-up by the terminal A, to the call server. Thus, the call set-up message identity is registered in the Middlebox 1)** middlebox (**i.e. middlebox 1**) registering itself and the mobile flows it handles at an midcom agent (**i.e. Call server**) ([0062] **Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**) at the control plane with which they communicate using an extended midcom signalling protocol(**i.e. fig.6 discloses a signaling path**) the midcom agent(**i.e. call server**) , signaling control orders to the middleboxes that

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registered, said orders pertaining to the handling of the mobile flows at the respective middleboxes (**[0062] Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding)**

Though, Mitchell teaches Middlebox adds its own identity to the call set-up message and route it to call server, it does not specifically teach registration at midcom agent, and where the common, IP-based control plane is separate from the IP-based user plane where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling

However, Das teaches a mobile node registering with an agent (**[0031] discloses A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily discovered by devices entering the network. The Foreign Agent will normally have a routable public address and the mobile node can attempt to register via the Foreign Agent 211. The Foreign Agent address can be used as a care-of address as mentioned, or the mobile node can use a collocated address to register with its Home Agent 123, using, for example, MIP registration)**

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell register middleboxes at the midcom agent, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das does not explicitly teach where the common, IP-based control plane is separate from the IP-based user plane

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However, Shew teaches where the common, IP-based control plane is separate from the IP-based user plane(see fig.1)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das where the common, IP-based control plane is separate from the IP-based user plane, as suggested by Shew. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das and Shew does not explicitly teach where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling.

However, Fieschi teaches where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling(**abstract discloses a switch header including a source identification field, a destination identification field and a temporary label identifying the flow of data in response to its first data frame, this first switch header being concatenated to said data frame before being transmitted to the router interface of the switching node via its switch engine**).

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das, and Shew where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling, as

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suggested by Fieschi. This modification would benefit the system to efficiently manage a packet flow different from session set up messages.

Regarding claim 2, Mitchell teaches the midcom agent (**i.e. call server**) sending its control orders to an individual flow via the middlebox at which the packet flow registers(**[0062] discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding**).

Regarding claim 4, Mitchell teaches the midcom agent (**i.e. call server**) using the identity of the middlebox (MID) that registered in order to find the functionality the middlebox has and provide a corresponding control order that it sends to the middlebox(**[0062] discloses Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding; this instruction is according to the functionality of the middlebox**).

Regarding claim 5, Mitchell teaches the midcom agent (**i.e. call server**) controls a number of middleboxes (**i.e. middlebox 1 and middle box 2**) provided in a network (**fig.6 discloses middlebox 1 and middlebox 2 that are control by the call server to execute a call set-up**)

an ingress middlebox (IN) (**middlebox 1 and middlebox 2**) , sitting at the edge of the network where an individual flow enters the network, filtering out control messages and

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tunnelling them to the midcom agent(**i.e. call server**)(**fig.6 discloses middlebox 1 and middlebox 2 are sitting at the edge of a network, call set-up message coming from terminal A pass through Middlebox 1 then to the call server. Call server sends control message to middlebox 1**)

the midcom agent(**i.e. call server**) in response sending control messages to each of the middleboxes (**i.e. middlebox 1 and middlebox 2**) it controls, this dividing the IP layer into an IP control layer(**i.e. fig.6 address realm D3**) and an IP user plane (**i.e. FIG.6 , Address realm D1, and Address Realm D2**).

Regarding claim 6, Mitchell teaches the midcom agent uses a routing table to send the control messages to the respective middleboxes on the IP control plane using an extended midcom protocol(**fig.6 discloses a signaling path**) (**[0062] disclose terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding. Thus, the call server inherently has some sort of middlebox's identity storage**).

Regarding claim 7, Mitchell teaches the midcom agent (**i.e. call server**) sends the control messages to the middleboxes (**middlebox 1 and middlebox 2**) by first sending them to the ingress middlebox (IN) from which they are sent in the same channel as the user data (**fig.6 and par [0062] disclose terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the**

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call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding).

Regarding claim 8, Mitchell teaches forwarding control messages (i.e. **call set-up message**) from one domain to another by having an ingress middlebox (i.e. **middlebox 1**), sitting the edge of a network which an individual flow enters(**[0062] Discloses Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**),

filtering out control messages and tunnelling them to the midcom agent (i.e. **call server**) (**[0062] Discloses Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**),

the midcom agent(i.e. **call server**) forwarding them to an egress middlebox (i.e. **middlebox 2**) at which the flow exits the network(**fig.7 step 62, discloses once the call server receives public addresses and port allocated of the call set-up message that is requested by terminal A, from the Middlebox 1. Then, the call server forward the message to terminal B via middlebox 2**)

Regarding claim 9, Mitchell teaches returning the signalling message to the ingress middlebox (IN) (i.e. **middlebox 1**) from where it is forwarded along same path as the user data flow (**fig.6 discloses a signaling path**).

Regarding claim 10, Mitchell teaches several midcom agents (i.e. **fig.6 box 18 discloses call servers/proxies**) provided at the IP control plane (i.e. **fig.6 Address Realm D3**),

simultaneously controlling one and the same flow(**fig.6 and [0062] discloses the call servers/proxies controlling the call set-up**)

Regarding claim 12, Mitchell teaches a plurality of IP based networks (**i.e. fig.6 Address Realm D1 and Address Realm D2**) and a session controller (**i.e. call server**) for set up of a communication path that traverses selected one of the networks(**fig.6 discloses setting a call between terminal A and terminal B**), each selected network having an ingress middlebox (IN)(**i.e. fig.6 middlebox 1 and middlebox 2**) at which a user flow enters the network and an egress middlebox (EN) (**i.e. fig.6 middlebox 1 and middlebox 2**) at which the flow exits the network, a midcom agent (**i.e. call server**) sitting at an IP control plane (**i.e. Address Realm D3**) , a plurality of middleboxes(**i.e. fig.6 middlebox 1 and middlebox 2**) sitting at an IP user plane(**i.e. fig.6 Address Realm D1 and Address Realm D2**), an extended midcom protocol allowing for communication between the midcom agent and the middleboxes(**fig.6 discloses a signaling paths that the call server and the middleboxes communicate through**)

the middleboxes being adapted to detect a user flow (**[0062] disclose terminal A sends its call set-up request to middlebox 1 on route to the call server 18**) and register its identity (FID) at the midcom agent(**i.e. call server**) together with the identity of the middlebox at which the flow was detected(**[0062] Discloses Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**), the midcom agent (**i.e. call server**) in response to a combined flow and middlebox registration sending a flow control order to the middlebox over the extended midcom protocol, a flow

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control order instructing the middlebox how to handle the detected flow ([0062]

Discloses the call server instructs the middlebox 1 to set up a binding).

Though, Mitchell teaches Middlebox adds its own identity to the call set-up message and route it to call server, it does not specifically teach registration at midcom agent, and where the common, IP-based control plane is separate from the IP-based user plane, and where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling,

However, Das teaches a mobile node registering with an agent ([0031] **discloses A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily discovered by devices entering the network. The Foreign Agent will normally have a routable public address and the mobile node can attempt to register via the Foreign Agent 211. The Foreign Agent address can be used as a care-of address as mentioned, or the mobile node can use a collocated address to register with its Home Agent 123, using, for example, MIP registration)**

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell register middleboxes at the midcom agent, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das does not explicitly teach where the common, IP-based control plane is separate from the IP-based user plane

However, Shew teaches where the common, IP-based control plane is separate from the IP-based user plane and where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling (**see fig.1**)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das where the common, IP-based control plane is separate from the IP-based user plane, and where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling, as suggested by Shew. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das and Shew does not explicitly teach where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling.

However, Fieschi teaches where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling(**abstract discloses a switch header including a source identification field, a destination identification field and a temporary label identifying the flow of data in response to its first data frame, this first switch header being concatenated to said data frame before being transmitted to the router interface of the switching node via its switch engine**).

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das, and Shew where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling, as suggested by Fieschi. This modification would benefit the system to efficiently manage a packet flow different from session set up messages.

Regarding claim 13, Mitchell does not explicitly teach the user flow is a mobile packet flow, and wherein in response to movement of a mobile terminal associated with the mobile packet flow, a new middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow

However, Das teaches the user flow is a mobile packet flow, and wherein in response to movement of a mobile terminal associated with the mobile packet flow, a new middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow **(Das,[0031] discloses As an alternative way of providing a connection back to its Home Agent, the mobile node may discover a Mobile IP Foreign Agent in the hotspot 119. The Foreign Agent could be collocated with the access router or provided as a separate router. A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily**

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discovered by devices entering the network. The Foreign Agent will normally have a routable public address and the mobile node can attempt to register via the Foreign Agent 211. The Foreign Agent address can be used as a care-of address as mentioned above, or the mobile node can use a collocated address to register with its Home Agent 123, using, for example, MIP registration)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell the user flow is a mobile packet flow, and wherein in response to movement of a mobile terminal associated with the mobile packet flow, a new middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

Regarding claim 14, Mitchell does not explicitly teach the user flow is a mobile packet flow, and wherein in response to movement of a network associated with the mobile packet flow, a new middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow

However, Das teaches the user flow is a mobile packet flow, and wherein in response to movement of a network associated with the mobile packet flow, a new

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middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow **(Das, [0031] discloses As an alternative way of providing a connection back to its Home Agent, the mobile node may discover a Mobile IP Foreign Agent in the hotspot 119. The Foreign Agent could be collocated with the access router or provided as a separate router. A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily discovered by devices entering the network. The Foreign Agent will normally have a routable public address and the mobile node can attempt to register via the Foreign Agent 211. The Foreign Agent address can be used as a care-of address as mentioned above, or the mobile node can use a collocated address to register with its Home Agent 123, using, for example, MIP registration)**

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell the user flow is a mobile packet flow, and wherein in response to movement of a network associated with the mobile packet flow, a new middlebox is configured to detect the user flow and register the identity of the user flow and the identity of the new mobile box with the midcom agent, and the midcom agent is configured to send a flow control order to the new middlebox instructing the new middlebox how handle the detected flow, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

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Regarding claim 15, Mitchell teaches receive from each of the registered middleboxes one or more mobile packet flows being handled by each of the registered middleboxes([0062] **Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**); and signal a control order to each of the registered middleboxes for handling the mobile packet flows at each of the registered middleboxes([0062] **Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding**)

Though, Mitchell teaches Middlebox adds its own identity to the call set-up message and route it to call server, it does not specifically teach registration at midcom agent, and where the common, IP-based control plane is separate from the IP-based user plane

However, Das teaches receive a middlebox registration message from each of multiple middleboxes associated with the IP-based user plane; register each middlebox for which a middlebox registration message is received([0031] discloses A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily discovered by devices entering the network. The Foreign Agent will normally have a routable public address and the mobile node can attempt to register via the Foreign Agent 211. The Foreign Agent address can be used as a care-of address as mentioned, or

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the mobile node can use a collocated address to register with its Home Agent 123, using, for example, MIP registration)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell receive a middlebox registration message from each of multiple middleboxes associated with the IP-based user plane; register each middlebox for which a middlebox registration message is received, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das does not explicitly teach where the common, IP-based control plane is separate from the IP-based user plane

However, Shew teaches where the common, IP-based control plane is separate from the IP-based user plane(see **fig.1**)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das where the common, IP-based control plane is separate from the IP-based user plane, as suggested by Shew. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das and Shew does not explicitly teach where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling.

However, Fieschi teaches where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling(**abstract discloses a switch header including a source identification field, a destination identification field and a temporary label identifying the flow of data in response to its first data frame, this first switch header being concatenated to said data frame before being transmitted to the router interface of the switching node via its switch engine**).

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das, and Shew where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling, as suggested by Fieschi. This modification would benefit the system to efficiently manage a packet flow different from session set up messages.

Regarding claim 16, Mitchell teaches the midcom agent is configured to send its control orders to an individual mobile packet flow via the middlebox at which said mobile packet flow registers(**[0062] Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up**

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message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding)

Regarding claim 17, Mitchell teaches the midcom agent (**i.e. call server**) using the identity of the middlebox that registered in order to find the functionality the middlebox has and provide a corresponding control order that it sends to the middlebox([0062] **discloses Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding; this instruction is according to the functionality of the middlebox).**

Regarding claim 18, Mitchell teaches the midcom agent (**i.e. call server**) controls a number of middleboxes (**i.e. middlebox 1 and middle box 2**) provided in a network (**fig.6 discloses middlebox 1 and middlebox 2 that are control by the call server to execute a call set-up**)

an ingress middlebox (IN) (**middlebox 1 and middlebox 2**) , sitting at the edge of the network where an individual flow enters the network, filtering out control messages and tunnelling them to the midcom agent(**i.e. call server**)(**fig.6 discloses middlebox 1 and middlebox 2 are sitting at the edge of a network, call set-up message coming from terminal A pass through Middlebox 1 then to the call server. Call server sends control message to middlebox 1**)

the midcom agent(**i.e. call server**) in response sending control messages to each of the middleboxes (**i.e. middlebox 1 and middlebox 2**) it controls, this dividing the IP layer into an IP control layer(**i.e. fig.6 address realm D3**) and an IP user plane (**i.e. FIG.6 , Address realm D1, and Address Realm D2**).

Regarding claim 19, Mitchell teaches the midcom agent uses a routing table to send the control messages to the respective middleboxes on the IP control plane using an extended midcom protocol(**fig.6 discloses a signaling path**) ([0062] **disclose terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding. Thus, the call server inherently has some sort of middlebox's identity storage**).

Regarding claim 20, Mitchell teaches send a mobile packet flow registration message to the midcom agent for one or more mobile packet flows being handled by the middlebox([0062] **Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server**); and receive a control message from the midcom agent for handling the one or more mobile packet flows(**[0062] Discloses terminal A sends its call set-up request to middlebox 1 on route to the call server 18. Middlebox 1 adds its own identity to the call set-up message and forwards it to the call server. The call server then instructs the middlebox 1 to set up a binding**).

Though, Mitchell teaches Middlebox adds its own identity to the call set-up message and route it to call server, it does not specifically teach receive a midcom agent announcement message; send a middlebox registration message to the midcom agent.

However, Das teaches receive a midcom agent announcement message([0031] **discloses A Mobile IP Foreign Agent advertises its presence to the network at regular intervals, allowing it to be easily discovered by devices entering the**

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network) send a midtebox registration message to the midcom agent; **([0031] discloses**
A Mobile IP Foreign Agent advertises its presence to the network at regular
intervals, allowing it to be easily discovered by devices entering the network. The
Foreign Agent will normally have a routable public address and the mobile node
can attempt to register via the Foreign Agent 211. The Foreign Agent address can be
used as a care-of address as mentioned, or the mobile node can use a collocated
address to register with its Home Agent 123, using, for example, MIP registration).

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of Mitchell receive a midcom agent announcement message, send a midtebox registration message to the midcom agent, as suggested by Das. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das does not explicitly teach where the common, IP-based control plane is separate from the IP-based user plane

However, Shew teaches where the common, IP-based control plane is separate from the IP-based user plane(see fig.1)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das where the common, IP-based control plane is separate from the IP-based user plane, as suggested by Shew. This modification would benefit the system to efficiently manage the packet flow.

The combination of Mitchell and Das and Shew does not explicitly teach where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling.

However, Fieschi teaches where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling(**abstract discloses a switch header including a source identification field, a destination identification field and a temporary label identifying the flow of data in response to its first data frame, this first switch header being concatenated to said data frame before being transmitted to the router interface of the switching node via its switch engine**).

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the system of The combination of Mitchell and Das, and Shew where the user data packet flow is separate and different from session set up messages sent with IP layer control signaling and/or session layer control signaling, as suggested by Fieschi. This modification would benefit the system to efficiently manage a packet flow different from session set up messages.

Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell, and Das, and Shew, and Fieschi and further in view of Ramsayer to (US6985961).

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Regarding claim 3, the combination of Mitchell and Das, and Shew, and Fieschi does not teach a midcom agent sending its control orders to an individual flow via another midcom agent than that at which the flow registered

However, Ramsayer teaches a midcom agent (**i.e. fig.1, user agent**) sending its control orders to an individual flow via another midcom agent (**i.e. fig.1, composite user agent**) than that at which the flow registered(**abstract discloses a composite user agent acting on behalf of a group of member user agents in a communication network**).

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the system of the combination of Mitchell and Das , and Shew, and Fieschi sending a control orders via another midcom agent, as suggested by Ramsayer. This modification would benefit the system of the combination of Mitchell and Das by providing the system with a standby controlling agent that will function on behave of one of the controlling agents incase malfunction occurs.

Regarding claim 11, the combination of Mitchell, and Das , and Shew, and Fieschi does not teach a midcom agent with a plurality of control function sets each set relating to the operation of an individual middlebox and comprising control orders for control of the operation of the corresponding middlebox

However, Ramsayer teaches a midcom agent (**i.e. fig.1, composite user agent**) with a plurality of control function sets (**abstract discloses behaves and is viewed as both a registrar and a proxy server**), each set relating to the operation of an individual middlebox (**i.e. fig.1, user agent**) , and comprising control orders for control of the

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operation of the corresponding middlebox (i.e. fig.1, user agent) (col.2 lines 21-25 discloses all incoming SIP requests from the network are directed to the composite user agent before being passed to the appropriate member user agent. The member user agents locally configure themselves to send all SIP requests to the composite user agent)

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the system of the combination of Mitchell and Das, and Shew, and Fieschi by including a midcom agent with a plurality of control function set that are related to the operation of the middleboxes, and controlling the operation of the corresponding middleboxes accordingly, as suggested by Ramsayer. This modification would benefit the system of the combination of Mitchell and Das to efficiently control the network transactions.

Response to Arguments

1. Applicant's arguments with respect to claims 1, 12, 15 and 20 have been fully considered but are moot in view of new ground(s) of rejection.

Applicant Argument:

- Applicant's argues that The Examiner admits that Mitchell lacks a teaching of "registration at midcom agent" and applies Das which teaches a mobile registering with a foreign agent so the foreign agent can be used as a care-of address for sending packets to the mobile or the mobile can use a collocated address to register with it home agent using mobile IP registration. It appears that

the Examiner is likening the midcom agent with the foreign or home agent.

Clarification is requested. Examiner interpreting Midcom agent as a management entity.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZEWDU BEYEN whose telephone number is (571)270-7157. The examiner can normally be reached on Monday thru Friday, 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 1-571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. B./

Examiner, Art Unit 2461

/Huy D Vu/

Supervisory Patent Examiner, Art Unit 2461